secondary canals include both concrete lined and earthen construction and are apparently used at similar rates. It appears that canal embankments are more commonly used for nesting than drains because the vegetation is maintained at lower levels in the canals.

Another cause of burrowing owl population decline could potentially be related to the change in agricultural crops. Department staff has observed that burrowing owls appear not to use areas adjacent to orchard or vineyard type crops like they use areas adjacent to row crops. Conversion of row crops to orchard/vineyard crops could reduce burrowing owl habitat suitability.

Although natural predation may be significant in grassland habitats such as the Carrizo Plains (Ronan 2002), predators such as large raptors and coyotes may also benefit owls in more disturbed areas by checking the populations of feral predators such as domestic cats, although there is no data on this question.

Summary

The Department believes the petition and supporting information discussed above, and in the Threats section below, accurately summarize the factors that may negatively affect the ability of WBO populations to survive and reproduce.

Degree and Immediacy of Threats

The petition provides information on the degree and immediacy of threats to the WBO. Threats to the burrowing owl were divided into Urban Development, Threats to core populations in the Imperial Valley and Central Valley, Destruction of Burrowing Rodents, Relocation of Owls, Agricultural Practices, Pesticides, Predation, Disease, Small Population Sizes, and Other Anthropogenic Factors. They are discussed below as presented in the petition.

Urban Development

Urban development is a threat to burrowing owl populations. The petition thoroughly covers this threat. The petition cites DeSante and Ruhlen (1995) that 85 % of the known breeding population of burrowing owls in California is found on agricultural land in the Imperial and Southern Central Valley and that these areas are rapidly urbanizing according to the California Department of Finance population growth statistics (CDF 1993, 1994, 2001). Discussions with Department of Conservation staff confirm the loss of agricultural production lands. Between 1984 and 2000 approximately 3,633 acres have been converted from agriculture to urban development, at a rate of approximately 227 acres per year within the Imperial Valley. The total acres in the Imperial Valley of irrigated agricultural lands in production in the year 2000 were approximately 519,500. The population within Imperial County is recorded at 149,000 for 2000 and it is

projected to grow to 294,200 by the year 2020. The growth increase is high, but the overall population in the County is still low relative to other County populations.

The petition also references documents that address the rapid urbanization of the Central Valley. The petition references the Department of Conservation Farmland Conversion Report (CDOC 1994, 2000) which documented the loss of approximately 74,006 acres of land converted from agriculture to urban and built up uses from 1990 to 1998 within the Central Valley. However, within the southern Central Valley (San Joaquin Valley) which maintains approximately 15.1% of the known breeding population, significant reserve lands have been set aside for other sensitive species such as the kit fox and many are known to support burrowing owl populations. In total, approximately 1,465,000 acres within the Central Valley are reserve lands or are in public ownership. The Department agrees that the threat of land conversion from agriculture to intensive urban development poses a risk to WBO populations. However, at this time the Department does not agree that the stability of the rangewide populations is presently at risk.

The petition documents the extreme development pressure and habitat loss for the burrowing owl in the Bay Area environs. The petition references a Department document (2002) that recorded the loss of 84 pairs of burrowing owls within the Bay Area population over the last three years.

In southern California the petition documents that planned developments in western Riverside and San Bernardino counties threaten many of the remaining significant breeding populations. Department Staff indicate that the burrowing owl has been severely reduced as a breeding species in the five coastal counties of southern California. Staff has documented approximately 30-70 nesting pairs occurring at about 25 sites from Santa Barbara County south to the Mexican border. Wintering populations are reduced from historic levels based on Christmas Bird Count data and field observation in these southern coastal counties. Again, the Department agrees that the loss of WBO habitat to intense urbanization poses a risk to some populations. However, at this time the Department believes that due to the stability and extent of the breeding populations in other portions of their range that there is no present risk to the statewide WBO population indicating that listing may be warranted.

Threats to core populations in the Imperial Valley and Central Valley

The petition emphasizes the risk of having approximately 95% of the known breeding population of burrowing owls within the Imperial Valley (71%) and the Central Valley (24%) (DeSante and Ruhlen 1995). However, due to the low detectability of burrowing owls in large open landscapes (grassland, shrub steppe, and desert scrub) it is difficult to estimate the burrowing owl population outside of the survey area. The habitat within the Imperial Valley represents only

2.5% of the total occupied habitat within the DeSante (1995) survey area and yet this area contains approximately 71% of the known breeding owls. The petition states that the size of the burrowing owl population in the Imperial Valley is a by-product of the agricultural land use and that negative changes in land use practices could significantly effect the breeding population. However, at this time the Department believes that this threat does not pose a present risk to WBO populations indicating that listing may be warranted. Many factors including the extent of the WBO range in California and the diversity of habitats occupied provide security to the stability of the population. Also, the fact that research on WBO in the 1970's within the Imperial Valley documented similar demographic characteristics as resent research (Coulombe 1971, and D. K. Rosenberg et al., unpublished data) indicated that although the management of irrigated agriculture may change over time (three decades) WBO appear to adapt.

Destruction of burrowing Rodents

The petition cites Anderson et al. (2001) who indicate that there is a direct connection between loss of burrowing mammals and the recent and historic declines in burrowing owl populations. The long term control of burrowing rodent populations has been part of various agricultural land management practices intended to minimize the loss of crops and forage for domestic livestock. These control programs have reduced the number of burrows available for use by burrowing owls. The petition cites Gordon (1996) who documented that widespread ground squirrel control programs were begun as early as 1869 and cited Marsh (1987) who documented that more than 9.9 million acres in California were under some form of ground squirrel control during his research in the late 1980's. The petitioners cite research documenting that landowners and managers on grazing, vineyard, and crop production lands operate rodent control programs involving shooting, poisoning with acute toxicants, anticoagulants, fumigants, trapping, and sealing burrows (Butts 1973, Salmon et al. 1982, Rosenberg et al. 1998). The petitioners also noted that burrowing owls have been incidentally poisoned and their burrows destroyed during rodent control programs.

The petition cites research that illustrates how healthy colonies of burrowing rodents are essential for the health of burrowing owl colonies and that periodic elimination of ground squirrels reduces the likelihood that burrowing owls will maintain colonies (DeSante et al. 1996). Overall the Department concurs with the petitioners regarding the necessity to maintain healthy ground squirrel colonies to maintain healthy burrowing owl colonies. However, at this time the Department does not believe rodent control programs pose a risk indicating that listing may be warranted.

Relocation of Owls

The petitioners contend that most relocation of owls is detrimental to

State Regulatory Mechanisms

The petitioners discuss the California Species of Special Concern listing designation, the California Environmental Quality Act, the CDFG Mitigation Guidelines, the California Fish and Game Codes, Natural Community Conservation Plans, and Mitigation Banks. The Department summarizes each of these regulatory actions below.

The petitioners contend that the **Species of Special Concern** designation has provided little practical benefit to the burrowing owl. This designation is intended for use as a management tool and for information; species of special concern have no special legal status. Species with this designation are often covered or discussed in CEQA documents along with state or federally listed species. Strategies to minimize impacts to these species are often included within CEQA documents or CDFG provides comments pursuant to CEQA to add conservation measures concerning species with this designation. While the legal effect of this designation is different from the legal effect of listing pursuant to CESA, species of special concern are considered in most CEQA projects, and consideration/mitigation for these species within the CEQA guidelines have provided for conservation of these species to a greater degree than for species without this designation.

The petitioners discuss the adequacy of **CEQA** at conserving burrowing owl populations and contend that even with all the considerations given under CEQA to mitigating impacts to burrowing owls, mitigation practices do not function adequately to prevent the ultimate decline of the population in certain highly developed landscapes. CEQA declares that it is the policy of the state to "prevent the elimination of fish or wildlife species due to man's activities, ensure that fish and wildlife populations do not drop below self-perpetuating levels, and preserve for future generations representations of all plant and animal communities" and requires public agencies to analyze and, in some cases, to mitigate the environmental impacts of projects they approve or carry out. The petition contends that CEQA theoretically has substantive mandates for environmental protection, but references areas in California where despite, the CEQA process to protect burrowing owl habitat, significant declines of occupied burrows have occurred.

The petition discusses the **CDFG Staff Report on Burrowing Owl Mitigation (1995)**. The petitioners discuss the formation of the California Burrowing Owl Consortium (CBOC), and the preparation of their document entitled "Burrowing Owl Survey Protocol and Mitigation Guidelines" in 1993. The Department has been involved with this conservation organization since its inception. The CDFG Staff Report prepared in 1995 utilized much of the information that was developed in the CBOC document. The CDFG Staff Report is intended to assist CDFG staff in reviewing CEQA projects which may impact

burrowing owl habitat. The Staff Report was developed by CDFG Headquarters Staff with input from Regional Staff and the pubic. The Staff Report's cover memo provides as follows:

> "Either the mitigation measures in the staff report may be used or project specific measures may be developed. Alternative project specific measures proposed by the Department divisions/regions or by project sponsors will also be considered. However, such mitigation measures must be submitted to ESD (Environmental Services Division, now part of Habitat Conservation Planning Branch) for review. The review process will focus on the consistency of the proposed measure with Department, Fish and Game Commission, and legislative policy and with laws regarding raptor species."

The petition contends that the Staff Report's use of a 100 meter radius around an active burrow (approximately 6.5 acres) as a threshold where impacts should be considered significant has been used inappropriately in project level mitigation. This threshold was developed by using a combination of intuitive disturbance distances (a few dozen meters) and territory considerations (Plumpton 1992, Desmond 1991). The Staff Report recommends as the second specific mitigation measure the following; "do not disturb occupied burrows during the nesting season...To offset the loss of foraging and burrow habitat on the project site, a minimum of 6.5 acres of foraging habitat (approximately 100 meter foraging radius around the burrow) per pair or unpaired bird, should be acquired and permanently protected. The protected lands should be adjacent to occupied burrowing owl habitat and at a location acceptable to the Department."

In summary, the Department recognized the limitations to the Staff Report. However, the use of this Staff Report during CEQA review has helped to conserve numerous burrowing owls and their habitat over the eight years that it has been in use.

The petitioners describe the **California Fish and Game Code** sections that prohibit the take, possession, or destruction of the nest or egg of any bird (Fish & G. Code, § 3503), and that prohibit the take, possession, or destruction of birds of prey or their nest or eggs (Fish & G. Code, § 3503.5.). The petitioners contend that there does not seem to be any enforcement of these codes and it is unknown whether these codes have ever been used to prosecute illegal "taking" of burrowing owls or owl nests and eggs. Also the petitioners contend that these code sections do not provide adequate protection for habitat. During 2001 there were 53 protected species citations issued by the Department, indicating some level of enforcement activity. Since approximately 1994 there have been 86 citations written for 3503 and 3503.5, of which 60 were for 3503.5. The Department believes these sections of the code provide some protection for burrowing owls, although not a level equivalent to that provided by listing under CESA.

RAPID ECOLOGICAL ASSESSMENT OF THE LIMITROPHE ZONE OF THE COLORADO RIVER

PROGRESS REPORT PRESENTED TO ENVIRONMENTAL DEFENSE

September 19, 2003

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1. Background

The Limitrophe Zone of the Colorado River is the 25 km stretch of river between Yuma, Arizona and San Luis, Mexico, that forms the border between Mexico and the United States (Figure 1). This river stretch has been identified as one of the few areas that support significant extensions of native riparian trees in the Lower Colorado Basin. This habitat type has been drastically reduced all along the Lower Colorado River, due to regulation of river flows and lack of overbank flooding, causing dramatic population declines in riparian birds and other wildlife. The Limitrophe, on the other hand, receives pulse-floods from the United States that stimulate the regeneration of native trees. This has triggered interest in implementing a binational natural protected area on the stretch of the river between Morelos Dam and San Luis Rio Colorado, Sonora, with the active participation of the Cocopah Tribe, environmental organizations, universities, and government agencies.

The regeneration and maintenance of native trees along the Limitrophe Zone represents one of the most important conservation opportunities in the Colorado River, as it provides habitat for endangered, threatened, or sensitive species such as Yellow-Billed Cuckoo (*Coccyzus americanus*), Southwestern Willow Flycatcher (*Empidonax traillii extimus*), and Bell's Vireo (*Vireo bellii*). Based on the existing habitat types and casual bird observations, the Limitrophe Zone is probably also a critical stopover site for neotropical migratory landbirds, and habitat for a diversity of mammals, reptiles, and amphibians. Yet, there is scarce information on the vegetation and wildlife in this region, and the pressures and threats are high. Understanding of the general patterns of diversity, abundance, distribution, and habitat use of both breeding and migrant species could help guide the management of this area and provide conservation opportunities for all birds and other wildlife.

2. Project Goals

The goal of this project was to collect critical information on the diversity and status of wildlife species and habitat value of the Limitrophe Zone of the Colorado River through the implementation of a Rapid Ecological Assessment (REA) for wildlife, and on a detailed analysis and mapping of vegetation using remote sensing and ground studies. The REA was carried out

by a binational team of scientists, with fieldwork occurring during July 2003. The fieldwork for wildlife assessment was carried out on the Mexican side due to permits restrictions, but the U.S. and Cocopah region was assessed for vegetation and wildlife habitat.

The information was used to identify the ecological value and the restoration and conservation opportunities in the area by associating the wildlife data with information on vegetative communities, extension of existing habitat types, and water flows in the Limitrophe Zone.

3. Activities and Methodology

The project activities were divided in four major components: vegetation, birds, other sensitive wildlife and hydrology.

3.1 Vegetation

Vegetation mapping was based on a June, 2002, aerial overflight and a June, 2002 ETM+ satellite image. Overlapping aerial photographs of the Limitrophe were obtained at 1,000 m (0.5 m resolution) and 3,000 m (1.5 m resolution). The digital, visible-band color photographs were georeferenced to the ETM+ image, and mosaiced to produce complete aerial coverage of the area between the outer levees for the entire Limitrophe stretch. The following features of the landscape were digitized by visual inspection of the photographs: outer levees; the boundary of the riparian zone inside the levees (there are also agricultural fields within the levees in this river stretch); the active river channel at the time of the photography; areas of emergent vegetation within the river channel; and stands of native trees across the floodplain. These coverages were saved as shape files in ArcInfo and as areas of interest in ERDAS. They were overlaid on a base layer prepared from the ETM+ image. The area corresponding to the riparian corridor was clipped, and the pixels were converted to reflectance-based, NDVI values. These were then distributed into 5 classes using an unsupervised classification program. These classes corresponded to areas of water or bare soil (the lowest NDVI class) and 4 classes of relative vegetation intensity. The classified image was converted to a vector coverage to serve as a basemap for the shape files.

The accuracy of vegetation assignments on the map was tested by ground surveys in the Limitrophe in August, 2002. Vegetation identified by inspection of aerial photographs was located on the ground and scored. Native cottonwood and willow trees over 6 m in height could be easily distinguished from other vegetation types. On the other hand, small trees could not be accurately distinguished from saltcedar bushes, and saltcedar and arrowweed often grew in intermixed patches. Hence, we were able to divide land cover classes into the following units: open water (based on inspection of aerials); emergent marsh area (based on inspection of aerials); bare soil (based on the bare soil + water NDVI class, minus the open water area from the aerials); mature native trees (based on inspection of aerials); and 4 saltcedar-arrowweed classes (based on NDVI values, minus the area of occupied by native trees for the highest NDVI class). The saltcedar-arrowweed classes also contained some immature native trees, mesquites and, along the riverbank, strands of common reed.

Vegetation was also surveyed by ground crews conducting bird counts (see below). Percent cover of bare soil, water and the main perennial tree and shrub species were estimated in 30, 1.5 ha plots placed along the Limitrophe, mainly on the Mexico portion due to restricted access along the U.S. side (Figure 2). Percent cover was not measured but was estimated visually at these sites.

3.2 Birds

The assessment of avian use included three major activities: mist-netting, area searches, and call-response surveys for priority species. These activities provided information on the status and habitat affinities of the breeding species in the Limitrophe Zone. Fieldwork was conducted from July 7 – 10, 2003, with the participation of 6 biologists from Pronatura Sonora and the University of Arizona.

We complemented this information with data from Yellow-billed Cuckoo and Willow Flycatcher surveys conducted since 1999 (García-Hernández et al. 2001, Hinojosa-Huerta et al. 2002), and with information collected by Linden Piest from the Arizona Game and Fish Department. We also incorporated information on noteworthy bird records for the region compiled by Richard Ericsson (Patten et al. 1993, 2001; and Ericsson et al. field notes).

3.2.1 Mist-netting

We operated 4 mist nets (12 m wide, 2.6 m height, 30 mm mesh size) distributed on two 7 ha plots of native riparian vegetation in the Limitrophe Zone, following standard procedures described by Ralph et al. (1996). Nets were operated simultaneously at the two sites for 5 hours (starting at sunrise) during the 4 fieldwork days (a total of 160 net-hours). Captured birds were banded using aluminum USFWS bands and we collected data on species, age, sex, weight, body condition (fat deposition), and breeding status. Criteria for aging and sexing followed Pyle (1997).

3.2.2 Area searches

We evaluated bird populations using the area search method (Ralph et al. 1996) on 30 1.5 ha plots along the Limitrophe Zone (Figure 2). Each plot was surveyed only once. The procedure at each plot consisted of recording all detected birds (song, call, or visual) in a period of 20 min, during which the surveyor traversed through the plot. This methodology allows for the evaluation of breeding populations as well as for migratory birds, while providing quantitative data for habitat analysis. Surveys were conducted starting at sunrise and continuing for 4.5 hours.

3.2.3 Call-response surveys

Call-response surveys were conducted for priority species, which rarity preclude their accurate assessment with other methods. Target species included Southwestern Willow Flycatcher (*Empidonax traillii extimus*), Bell's Vireo (*Vireo bellii*), and Yellow-billed Cuckoo (*Coccyzus americanus*). The procedure consisted of playing the territorial song of the species trying to elicit the response of a breeding male. The localization of the male allows for the opportunity to search for breeding activity and monitor nests, thus allowing for an evaluation of the breeding status of this target species. We used a CD with a sequence of the Willow Flycatcher, Bell's Vireo, and Yellow-billed Cuckoo vocalizations. The CD was played on 2 min-intervals, while traversing 500 m transects. The surveys were conducted at suitable sites, at or nearby the area search plots. A total of 20 transects were completed. Surveys were conducted starting at sunrise and continuing for 4.5 hours.

3.3 Other Sensitive Wildlife

This component focused on priority species or species of concern of mammals, reptiles, and amphibians in the study area. Between 21 and 25 July 2003, we surveyed selected areas along the Río Colorado between Algodones and Ejido Pachuca to obtain an overall impression on the species that would or could be benefited from managing the Limitrophe Zone as a protected area. Possibilities of surveying were hampered by the intensity of illegal activities occurring in the region, and we suspended activities between and around sunset and sunrise, but we were able to invest some reasonable effort in assessing the wildlife of the area. This included trapping small mammals with Sherman traps, operating a small set of reptile pitfall traps, and using a freshwater turtle trap, in addition of surveying the area for tracks and signs. Additionally, observations on other wildlife were gathered while conducting bird surveys. Survey time was not best, as some species might have had very limited activities due to the heat, while other, notably some amphibians, still awaited for some rain.

We surveyed three areas:

-1 km south of Presa Morelos (32°42.063' 114°43.399')

- Ejido Pachuca 1 (32°37.884' 114°47.222')

- Ejido Pachuca 2 (32°37.920' 114°46.987')

These sites are composed of a sandy substrate covered by shrubs (*Pluchea sericea*) and trees (especially *Tamarix ramosissima*, but including also *Salix gooddingii*, *Populus fremontii*, *Prosopis pubescens*, and *Parkinsonia microphylla*). The particular composition varied between areas. Herbs were notably absent, perhaps due to the lack of rains, as yet to fall.

3.4 Hydrology

A floodplain model of the Limitrophe is being developed. For this study, we collected data on historic flows through the Limitrophe and plotted them against carrying capacity of the floodplain between the levees under different scenarios. These scenarios included: design capacity between the levees; capacity as it presently exists, reduced by vegetation growth and

siltation; and capacity of a pilot channel proposed by the International Boundary and Water Commission to delineate the U.S – Mexico border. Flow data was obtained from the International Boundary and Water Commission web site; other information was from Sylvia Waggoner, IBWC, El Paso, Texas (private communication).

4. Results and Discussion

4.1 Vegetation and other Land Cover Classes

A land cover map of the Limitrophe is in Figure 3 and the areas of different landcover classes are in Table 1. A detail of the landcover coverage is in Figure 4, showing marsh, river, tree and shrub layers of the GIS for the Limitrophe. The total area between the levees is approximately 6,200 ha, of which 2,700 ha is floodplain and 3500 ha are agricultural fields within the levees. These fields have special status since they are within the flood zone (they are operated and owned by ejidos and private owners, but do not receive the same protection or compensation from the Federal Government in case of flood damage). We divided the Limitrophe into two stretches based on river geomorphology. The northern stretch, extending for approximately 10 km below Morelos Dam, is very narrow (< 1 km wide) and contains the highest proportion of native tree cover of any stretch of the Lower Colorado River, in either the U.S. or Mexico. Willow and cottonwood trees constitute 18% of the vegetation in this stretch. The southern stretch is much wider and is less heavily vegetated, but still supports significant stands of trees in local areas.

Native trees occur as isolated individuals or, more commonly, in small strands of trees that run parallel to the course of the river (Figure 4). These strands occur immediately beside the current channel, but are also distributed across the floodplain. They appear to represent the high-water mark of previous flow events, where tree seeds were deposited. In total, mature trees (>

6m height) cover 83 ha of the floodplain. Immature trees, which cannot be distinguished from other vegetation on aerial photos, cover an additional area of the floodplain.

Ground surveys of vegetation were conducted during the rapid assessment for birds. Although the plots were not randomly chosen, they do offer a more detailed view of the vegetation structure of the floodplain than is possible with aerial photos alone. In the bird survey plots, willows and cottonwoods covered 19.72% ± 2.96 and 9.72% ± 1.78, of the ground area, adding up to almost 30% of the total cover. Saltcedar had an average cover of 23.75% (± 2.91), while mesquite trees were very rare (only 0.79% of the cover). Surface water was a regular feature, although as a low percentage of ground cover (7.68% ± 2.08). Shrubs other than saltcedar covered 12.55% of the survey plot area, and were dominated by arroweed (*Pluchea sericea*), seep willow (*Baccharis salicifolia*), and saltbush (*Atriplex* spp.). In similar ground surveys on the river stretch below the Limitrophe, native trees made up 8% of ground cover; hence, native trees are over three times more abundant in the Limitrophe than on the rest of the river. By contrast to the present results, native trees have become rare on the U.S. portion of the Lower Colorado River, present at only 1-2 % of land cover even in wildlife refuges where they have been artificially established.

Another noteworthy feature of the vegetation is the presence of marsh habitat within the river (approximately 12 ha). Although small in area, these marshes are important in supporting water birds and have developed due to the continued presence of water in the channel over the past several years. Yuma Clapper Rails have been found in these marshes both within and below the Limitrophe Zone.

4.2 Wildlife

4.2.1 Birds

4.2.1.1 Area Search

A total of 3,096 birds of 64 species were counted during the area searches. The average number of species at each survey plot was 19.93 (± 0.95), and the average number of birds at each plot was 106.75 (± 7.39), for an estimated density of 2,846 birds/40 ha (95% C.I. 2,442 – 3,250).

The bird community in the study area is highly influenced by the adjacent agricultural fields and rural towns. The most abundant species were Mourning Dove (*Zenaida macroura*), Red-winged Blackbird (*Agelaius phoeniceus*), Brown-headed Cowbird (*Molothrus ater*), and White-winged Dove (*Zenaida asiatica*). These species are common throughout the region (Hinojosa-Huerta et al. in press), and the Brown-headed Cowbirds are known to cause significant nest-parasitism impacts on riparian breeding birds (Powell and Steidl 2000).

Nevertheless, the restored native vegetation in the Limitrophe provides enough habitat to maintain a diverse community of breeding birds, many of which are rare or do not breed commonly anywhere else in the region. Common breeding landbirds throughout the region included: Abert's Towhee (*Pipilo aberti*), Verdin (*Auriparus flavipes*), Ladder-backed Woodpecker (*Picoides scalaris*), Cliff Swallow (*Petrochelidon pyrrhonota*), Song Sparrow (*Melospiza melodia*), Common Yellowthroat (*Geothlypis trichas*), and Blue Grosbeak (*Guiraca caerulea*). All of these species are riparian related birds, and the last three species are linked to riparian areas with continuous surface water. Cliff Swallows were nesting in large numbers at Presa Morelos and other hydraulic infrastructure along the nearby channels.

The continuous presence of surface water also provides habitat for many species of waterbirds, many of which are now uncommon or rare throughout the region. During the area searches we detected 129 individuals of 13 species of waterbirds, including Cinnamon Teals (*Anas cyanoptera*; with juveniles), Common Moorhen (*Gallinula chloropus*; also with juveniles), Pied-billed Grebes (*Podilymbus podiceps*), and Green Herons (*Butorides virescens*) .

Some of the species that were common in the Limitrophe, but are rare or absent in other areas of the Lower Colorado and delta included: Lesser Goldfinch (*Carduelis psaltria*), Hooded Oriole (*Icterus cucullatus*), Bullock's Oriole (*I. bullockii*), Ash-throated Flycatcher (*Myiarchus*